

# Content

Science and Technology News from Chinese Media in April 2007

Collected and Compiled by the Helmholtz Beijing Office

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## Helmholtz News Concerning China

The 3<sup>rd</sup> Workshop of METRASYS was held between the 2<sup>nd</sup> and the 5<sup>th</sup> of April in Hefei, capital city of the Anhui Province. Prof. Reinhart Kuehne and two more colleagues from the Institute of Transportation, DLR and together with 2 from FhG, 2 from Freie Universitaet, and one from Wuppertal and GTZ each, came for this event, which was assisted and jointly organized by their local partner ASEC. METRASYS is one of the 4 or 5 BMBF Mega-City projects having run for three years in China. It has won great

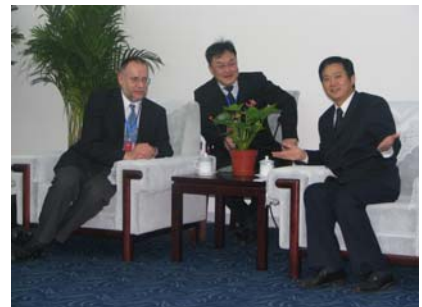


attention on the Chinese side. There are two Chinese cities involved in this project as cooperative partner, one is Jiading, a suburb city of Shanghai, and the other one is Hefei.

About 70 participants attended the opening ceremony, including government officials from the city planning committee, construction committee and transportation administration. A vice director general from the Planning Department of the Ministry of Science and Technology, a vice mayor of Hefei and the director

general of the Department of Science and Technology, Province Anhui were shown up in this workshop. Dr. He from the Helmholtz Beijing Office presented an opening address.

One feels the warm welcome from the local government both at city and provincial level. Hefei is a beautiful city under big reconstruction. The government ambition is huge: a 17 kilometer long 10-lane Highway combined with Bus-Transit-System is already going to be put in use. The local Chinese partner ASEC has very good government relationship and develops state of the art traffic monitoring systems. This project can help the German partners to keep a closer eye on the Chinese development, to know the expertise and troubles inside Chinese community. Both the German consortium and their Chinese partners are all willing to extend this project into the future. Last year Prof. Kuehne received a Yellow Mountain Medal as International Cooperation Prize and this time he is offered with a nice office.



While in Hefei, Dr. He took also the time to visiting the University of Science and Technology China, one of the top 5 universities in China. He made a presentation to Prof. Hou Jianguo, vice president of USTC and his colleagues from the departments of research, graduate school and foreign affair office. He visited also the Biomass for Liquid Lab, led by Prof. Zhu Xifeng, as the photo indicates:



Dr. He also visited the Anhui sub-branch of Chinese Academy of Science, which is comprised with four independent institutes. The IPP has just assembled the world first superconducting Tokamak; the Institute of Optics and Fine Mechanics is focusing on optical observation and monitoring of environmental pollutions; the Institutes of Automation and Information are doing research in the fields as their name indicates.

Prof. Dinjus from FZK also paid a visit to FZK-BTL Biomass Project in Zibo for technical discussions.

## **1 Science News**

### **1.1 Energy**

#### **China to produce liquid fuel from coal**

**(China News, 2007-04-01)**

China's first coal liquefaction project, which will go into operation in 2008, will be able to produce more than one million tons of oil a year, significantly reducing the country's dependence on oil imports.

Shenhua Group Corporation Limited, one of China's largest coal producers, launched the coal liquefaction project in 2004 in Erdos, a city in the Inner Mongolia Autonomous Region.

"The project transforms coal into refined oil. When the second phase is completed in 2010, the plant will produce 6 million tons of oil products each year and help reduce China's reliance on crude oil imports," said Wang Pinggang, vice president of Shenhua Group.

According to Wang, Shenhua will invest 24.5 billion yuan (3.2 billion U.S. dollars) to build three production lines in the first phase of the project.

The first line, currently under construction, will enter trial production at the end of the year and be able to convert 3.45 million tons of coal into around one million tons of oil products.

When the other two production lines come on stream in 2009, the plant will be able to produce 3.2 million tons of oil products.

"More than 60 percent of the equipment we are using is domestically-made and we also own the intellectual property rights for the manufacturing technology," said Wang.

The coal liquefaction technique has drawn increasing attention in recent years as international oil prices have shot up.

"The Shenhua project is of great importance to China, the world's fourth largest economy, both in terms of energy safety and economic development," said Li Kejian, head of the coal liquefaction technology research center of the Beijing Research Institute of Coal Chemistry.

Statistics from the National Development and Reform Commission show that oil consumption increased 9.3 percent in China in 2006 to top 346 million tons, with net imports growing 19.6 percent to 163 million tons.

According to the Ministry of Land and Resources, China's coal reserves are around one trillion tons.

#### **Chinese straw-for-energy project nominated for Energy Globe Awards**

**(Xinhua Net, 2007-04-12)**

A Chinese project in which straw is converted into gas, along with 12 other sustainable programs from all over the world, made it to the final competition for this year's Energy Globe Awards late Wednesday.

Hans-Gert Poettering, President of the European Parliament, said at the award ceremony that the world should work together to protect the environment, adding that Europe should not be the sole actor in fighting global warming.

The annual Energy Globe Awards, which has become the world's most important environmental prize giving event, was established seven years ago by Austrian engineer and environmentalist Wolfgang Neumann. The awards are conferred on projects across the world which make careful and economical use

of resources and employ alternative energy sources.

The projects are presented in the five categories of earth, fire, water, air and youth. Five projects from different countries in each category were selected as winners.

China's Energy From Straws Program was nominated for the Energy Globe Award in the category of air, which is bestowed on programs, projects and initiatives aimed at reducing harmful emissions, keeping the air clean and improving its quality.

In the end, the air award went to small biogas plants in Vietnam which help cut greenhouse gas emissions.

Meanwhile, a four-year plan for establishing over 16,000 solar homes in India was awarded the Energy Globe Award in the category of fire.

The water award went to a U.S. program of using a special water filter, made of recycled plastics for gaining drinking water from waste water.

The earth award went to a Kenyan project for implementing solar energy ovens for drying vegetables and fruits and the youth award to a solar powered house in South Africa.

The host country Belgium won a separate national award for sensitively changing a historical private house into an energy saving building.

Though unable to attain the trophy, the Chinese project showed the world that China is playing its role in the field of energy saving and environmental protection, said Yu Chengjian, vice-president of the Science Academy of China's Shandong province, which developed the program.

The Chinese program was created to encourage farmers to trade-in their straw harvest and receive clean energy in return.

Between 1986 and 1995, a cooking gas supply system for villages was developed, which can efficiently convert straw into gas used for cooking by farmers.

Over 300 systems have been constructed in China, reducing indoor and outdoor air pollution and improving cooking conditions.

In addition, a 200-Kilowatt straw power plant was put into operation in 2005. Another project, which aims to convert straw into liquid fuel, such as biological diesel, over the next decade is currently being planned.

The nominees for Energy Global Awards come from around the world. People in each country can apply for the prize for their sustainable projects, however small they may be. This year, 13 projects were selected as nominees out of 732 submissions.

### **China Aims to Clean Up in Solar Power (CRI, 2007-04-13)**

Beijing officials are deadly serious about investing in solar power capacity at home and eventually becoming a dominant player in this rapidly-emerging, clean energy technology, the Business Week reports.

Consider that some 1,100 solar panels are being installed over the curved roof of Beijing's National Indoor Stadium, ahead of the 2008 Summer Olympics. In October, SunTech Power (STP), based in the old industrial city of Wuxi in Jiangsu Province will begin installing a 130 kilowatt solar energy system in the main venue of the games—Bird's Nest Stadium. Beijing has also been installing solar powered streetlights throughout the Olympic Village as well as in less urbanized areas of the Chinese capital's

suburbs.

This is a serious and sustained push to diversify China's energy mix, local officials contend. Beijing has pledged to install three megawatts of solar power for the 2008 Olympics. However, "If you add up all the solar energy investment in the Olympic Village, National Indoor Stadium, Bird's Nest, and rural villages, it is entirely possible that Beijing could have six megawatts by 2008," says Zhu Wei Gang, a vice-president with Beijing Corona Science & Technology, the company which is installing the solar panels in the National Indoor Stadium.

### **Ambitious Goals**

China's worsening environment and overly dependence on imported oil have prompted the government to set some ambitious goals for solar power. Last year, China's solar power consumption was less than 10 megawatts, a tiny fraction of the country's total electricity consumption of 2.83 billion megawatts. By 2010, though, China hopes to be generating and consuming about 300 megawatts of solar energy, roughly equivalent to what Japan, the world's second largest consumer of solar energy, used last year.

Getting there, however, will be a stretch. China's domestic solar power industry is a work in progress. There are more than 150 Chinese companies that make photovoltaic cells that convert light into electricity, accounting for a third of the world's solar cell production. Yet the industry is heavily reliant on overseas supplies of polycrystalline silicon, or polysilicon, a key material used in solar cell production. And since demand for alternative energy has been low at home until recently, Chinese solar cell makers export 90% of their products to Germany, Japan, the U.S. and other countries.

There are compelling reasons for China to build up its own industrial solar energy capacity. The global market for solar panels and cells has been growing at a 38% compound annual growth rate since 2001. Demand is so brisk that there is now a serious shortage of polysilicon. In fact, prices for the material have jumped tenfold, to \$200 to \$300 per kilogram, since 2003.

### **"Foreigners Have Power"**

If China developed a robust domestic market for solar power, it could shift the solar industry's balance of power, from the West and Japan to the Middle Kingdom. Just as the focal point of global TV and personal computer manufacturing has shifted to China, solar panel and cell production could be next, some argue. "If the domestic Chinese PV (photovoltaic cell) market starts to develop that would pretty much be the nail in the coffin for other countries because then not only will the cluster be here, but the [lower] manufacturing cost will be here," figures Timothy Chang, managing director of Citigroup Venture Capital China. However, the report quotes Meng Xiangan, secretary general of the China Solar Energy Society, as saying China's solar industry now relies on foreign imports for its raw materials and exports most of its finished products overseas. "The foreigners have, in their hands, the power to direct which way our solar industry is heading," Meng said.

The German market, for instance, continues to be the largest market in Europe. Its growth, however, appears to be slowing down over time, said Kevin Wei, chief financial officer of Shanghai-based SolarFun Power Holdings (SOLF).

### **Polysilicon Monopolists**

Another huge obstacle to China's solar power industrial ambitions is the current shortage of polysilicon. Seven companies—including Germany's Wacker Chemie (WKCMF), Mitsubishi Materials (MIMTF), Sumitomo Titanium (SMOEF), and Renewable Energy Corporation ASA—hold a monopoly over the world's polysilicon supply.

Chinese solar cell makers have to pay dearly for the stuff, which has somewhat undercut their huge labor cost advantage. "Access to polysilicon serves as barrier to growth and entry for many Chinese companies," says Sanjeev Chaurasia, vice-president with the Credit Suisse's Energy Group. "If they have unfettered access to polysilicon, they'll be able to compete on cost and not necessarily on access to raw materials," she adds.

China is now trying to level the playing field by developing its own polysilicon supply. At least 11 new polysilicon projects are in the pipeline. China hopes to be able to produce 12,660 tons of polysilicon and break its dependence on foreign supplies by 2011, according to THT Research.

#### **Little Incentive to Invest**

However, whether these Chinese polysilicon suppliers can actually produce so much polysilicon remains to be seen. "It can be a problem to obtain the technology. Foreign technology suppliers are not so willing to sell them know-how and technology," points out Frank Haugwitz, a technical consultant with German Agency for Technical Cooperation. Chinese polysilicon suppliers have been using Russian technology to make polysilicon but have yet to replicate their German and Japanese counterparts' scale of production. Then there is the fact that Chinese power companies, which rely heavily on coal, have little incentive to invest in more expensive solar energy capacity given that electricity prices are fixed and they can't pass along the cost to consumers.

China's Renewable Energy Law, which went into effect January, 2006, ordered power companies to use a certain amount of renewable energy but failed to provide any financial incentives to do so. Beijing Corona Science & Technology's Zhu points out "The government needs to have a good policy to allow the solar industry to develop because the cost of solar power is too high right now."

#### **Subsidies Not a Given**

Chinese solar power companies have been lobbying the government to adopt a "feed-in tariff" system modeled after Germany's.

Power companies would be forced to buy solar-generated electricity at a fixed rate and the government would kick in a subsidy to encourage them to use clean energy.

"There's not a big chance of such a policy coming out in the short-term," said Li Junfeng, secretary general of the Chinese Renewable Energy Industries Assn. He added that it would be difficult for the Chinese government to provide as much in subsidies as their German counterparts.

If these problems can be worked out, there is certainly plenty of demand for cleaner energy sources in the world's second biggest energy consumer behind the U.S.

So far, most of China's demand for solar power has come from government rural electrification projects in sparsely populated areas in Tibet, Qinghai, or Xinjiang provinces, where it does not make economic sense to build power stations.

#### **Roof Panel Push**

However, the real growth in China's solar power market will continue to come primarily from these rural, off-grid, solar projects. German government official Haugwitz predicts that 180 megawatts of the new solar power in the coming years will be set up in these rural areas.

In addition, some local governments in high-power-consuming urban cities in coastal China are starting to encourage the use of solar energy. Right across the border from Hong Kong, the southern metropolis of Shenzhen now requires all new buildings 12 floors or higher to install solar water heaters on their rooftops. Experts predict that one-fifth of all rooftops in Shenzhen will be covered with solar panels by

2010.

Shanghai has announced plans to invest 10.5 billion yuan to install solar panels on top of 100,000 rooftops by 2015. The Shanghai municipal government will start by subsidizing half of the cost and gradually reduce subsidies as the price of solar panels drops.

### **China's nuclear industry seeks self-reliance**

**(Xinhua Net, 2007-04-24)**

China is looking to fuel its nuclear power industry with largely self-developed technology by 2020 as it gradually reduces its reliance on imported technology, a senior academic of the nation's top science institute said yesterday.

The country has been advocating greater dependence on nuclear energy as part of its efforts to reduce global warming gases emitted by burning fossil fuels.

China's first self-developed pressurized water reactor is expected to be put to use by 2017, Ouyang Yu, an academic of the Chinese Academy of Sciences, said.

The objectives will be achieved based on the digestion and development of the latest technology acquired through the purchase of four nuclear reactors and technological transfer from the Westinghouse Electric Company.

During a workshop on the third generation nuclear power technologies in Shanghai yesterday, the head of China Atomic Energy Authority, Sun Qin, reiterated the nation's ambition to develop new generation nuclear power technology.

But the nation will have to maintain the policy of combining self-reliance technological development and foreign design imports in the short term, Zhang Huazhu, president of China Nuclear Energy Association, said.

The government recently announced the purchase of four reactors from the U.S. company, with an estimated total price of up to 8 billion U.S. dollars. Along with the purchase will come the transfer of AP1000 technology, which is believed safe, cost efficient and advanced compared with the 1970s-era reactors that dominate in China.

The deal, in which the extent of technology transfers includes design of the equipment and nuclear facilities as well as technical support, will be completed in May, and the first of the four reactors will begin to generate power by 2013.

"It will take a few years for China to absorb the technology and the nation is keen to come up with its own design for the third-generation nuclear facilities," said Ouyang, also chief designer of China's first self-built nuclear power plant.

"By 2020, we could basically rely on our own technology."

As it seeks to reduce its reliance on coal-fired, polluting plants, China is committed to increasing nuclear power generation capacity to 40 gigawatts by 2020, about five times the installed capacity in 2005.

The nation plans to build a strategic reserve of natural uranium. Ouyang said the nation's own uranium ore supply could meet the nation's demands by 2020.

### **ITER Procurement Packages Conference Came to a Successful Conclusion**

**(MOST, 2007-04-27)**

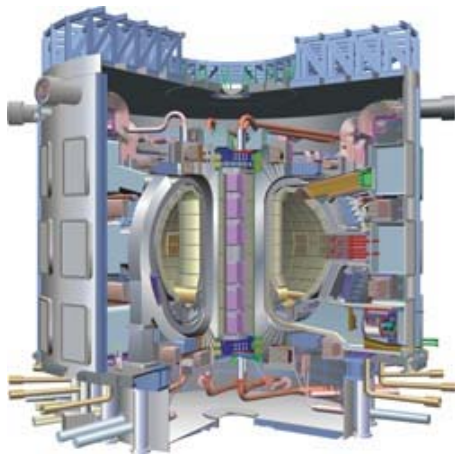
To ensure the successful implementation of the Chinese tasks in the ITER Program, the ITER

Procurement Packages Conference was held in Zhengzhou on 10-11 April.

The conference exchanged information on the recent international development of ITER Program, foreign work progress and overall domestic situation and conducted in-depth discussion into the development and manufacture of the components in the 12 procurement packages undertaken by China. Since China's tasks have already been defined, this conference has facilitated better implementation of various tasks.

### **Work on ITER project wins praise from international community**

**(CAS, 2007-04-30)**



Neutronic studies conducted by CAS researchers for the International Thermonuclear Experimental Reactor (ITER) project are spoken highly by an international panel of experts.

At a few recent meetings to review the developments of ITER tasks held in Cadarache, France, Prof. WU Yican and Dr. ZHENG Shanliang from the Institute of Plasma Physics (IPP), the CAS Hefei Institutes of Physical Sciences, reported to more than 20 participants the achievements scored by the FDS (Fusion Design Study) team of IPP on research tasks commissioned by ITER, and put forward suggestions on its future development. The work won unanimous praise from their international peers.

The neutronic research in a reactor is to explore neutrons' movement, their interaction with other nuclides within the reactor and their influence on reactor's performances. The study lays disciplinary basis for the design of a reactor, the assessment of nuclear safety and its impact on the environment, and the radioactive damage caused on a material. At the same time, it is applicable to other fields of nuclear technology, such as neutron photography, detection and measurement, and neutron radio-therapy against cancers. As early as in 2005, an ITER research task conducted by IPP scientists on "Nuclear analysis of the upper port of ITER" was accepted. Just because of the success, ITER decided to recommend Chinese scientists to work for two other research tasks under the titles of "Update of the ITER 3-D model for MCNP and the nuclear data library for dose calculation" and "testing and application of A CAD/MCNP interface program for ITER neutronic design and calculations."

Based on the experience and academic buildup from the first task, IPP scientists completed their research work on the other two projects, laying a solid foundation for the modeling, databases and modular software for the future research and nuclear safety analysis of ITER. At present, the research results, such as software, data libraries and models derived from the two tasks have been applied in EU, US, Japan, ROK and India, making an indelible contribution to the ITER in the aspects of future design and analysis. In a letter to Prof. Wu, Dr. H. Iida, an ITER officer in charge of the neutronic tasks, said that the CAS team has become "one of leading groups in the world," making remarkable progress in some neutronic topics, reaching "the most advanced level." In addition, many authoritative experts in this field in the EU, US and Japan also pour praises into the team. In 2007, for example, the American Nuclear Society Annual Meeting has invited Prof. Wu, the head of the team, to Boston to deliver a lecture on this regard.

## **1.2 Earth and Environment**

### **China to Collect Sewage Disposal Fees Nationwide**

**(CRI, 2007-04-03)**

To promote environmental protection, the Chinese government will collect a sewage disposal fee in all cities by the end of this year.

The National Development and Reform Commission (NDRC) says China should use the price leverage to boost environmental protection, promoting the idea "You Pollute, You Pay."

Xinhua net reports that the NDRC met to discuss reforms of the nation's economic system in Chengdu, capital of Sichuan province, on Monday.

NDRC Deputy Director Chen Deming said at the meeting that the fees would be used to help construct and operate sewage disposal plants.

He pointed out that some plants do not play their part in reducing water pollution by disposing of sewage before discharge due to scarcity of funds.

According to the report, the NDRC cites that cities set sewage disposal fees at 0.67 yuan per ton, but this is only 67 percent of the actual cost of sewage disposal. Currently, only 55 percent of waste water is treated in 36 medium and large cities.

As for treating garbage in cities, Chen Deming says landfills cannot solve every problem. He notes that garbage should be sorted to recycle or burn.

He says sewage and garbage treatment fees will be set with the goal of reducing harmful discharge. And, although local governments have a right to collect fees and fix a concrete standard, they should give subsidies to low-income people to not increase their financial burdens.

### **Shanghai becomes a model for research on global warming**

**(China News, 2007-04-04)**

Global warming might mean a lot more to cities near sea coasts or river banks like Shanghai and London than to inland cities, for they might be submerged by the flood due to the rising sea-level. Recently, a Sino-British research program on the possible flood in the Taihu Lake basin was launched, with Shanghai as its focus.

British researchers have already noticed Shanghai's risk of being submerged by flood in the future, for it is one of the most endangered cities in the world.

"If we don't take measures to stop emission of greenhouse gases, the average temperature in the world might rise by 2 degrees by 2050, then the coastal cities might be submerged under the rising seas," said Paul Brown, the chief editor of the environmental column of the *Guardian*, "Though the speed might be slower than the extreme result by computers, we have to be aware of the danger," Paul warned.

### **CAS project taps bio-resources in Panxi area**

**(CAS, 2007-04-05)**

Headed by SU Jiangchun from the Institute of Mountain Hazards and Environment under the joint sponsorship of CAS and Chinese Ministry of Water Conservancy, a research team has completed a study on the bio-resources in Panxi Area in southwest China's Sichuan Province. Titled "Characteristic

Bio-resources Comprehensive Exploitation and Its Demonstration in Panxi Area," the research has been supported by the National Key Technologies Research and Development Program during the 10th Five-year Plan Period (2001-2005).

During the years from 2002 to 2004, the researchers have mainly scored the following achievements.

The success in screening of seven unique plant species for the regional development, including those that could be used as herbal medicine or ornamental flowers, wild fungi used as food stuff or pesticides, and endemic fruits; the development of four protection technologies of indigenous germplasm resources, three techniques for transplant cultivation and domestication, and three techniques for comprehensive exploitation and management of the bio-resources.

The introduction of two operating approaches for agricultural production: one featuring an intensive operation in land use and a contract system for farmers, the other characterizing concentrate management by enterprises and scattered operation for farm workers. The scientists have succeeded in developing three industrialized projects, leading to the establishment of three demo bases for industrialization, testing and demo plots of farmland with a total coverage up to 251.4 hectares, turning out 108 million yuan in annual output value.

In the course of the project's enforcement, the scientists never fail to pay attention to the coordination between the biodiversity and ecology conservation and resource exploitation. For this, they built up an S&T garden for addressing the specialty bio-resources, featuring the protection of the native germplasm trove and the buildup of exploitable expertise. The success provides a technical pillar for sustaining the developmental tempo of regional development in the Panxi area.

### **China's glacier shrinks sharply in recent years (CAS, 2007-04-11)**



The total area of China's glaciers has shrunken by more than 3,200 square kilometers over the past four decades, accounting for about 5.5% of that in the 1960s, according to a research team led by SHI Yafeng, a renowned glaciologist from the Cold and Arid Regions Environmental and Engineering Research Institute under CAS. The shrinkage has led to a reduction of 7% ice volume (about 390 cubic kilometers) of China's glaciers and an average decrease of 6.5 meters in ice surface, say

the experts.

The findings were made on the basis of an information system of China's glaciers, a component of the major research project entitled "An investigative research on the distribution and resources of Chinese glaciers." Starting in 1978, more than 50 scientists have participated in the research and more than a dozen field expeditions with the help of more than 2,000 aerial maps, 342,000 aero-photographic pictures, and 200 satellite-relayed images. The project has recently received the second prize of the National Award for S&T Progress in 2006.

Thanks to the field trekking surveys over the past 24 years, the status and developments the glaciers throughout the country have been described by using more than 40 parameters (such as geographic location, area, orientation, elevation, and classification of morphological type).

The information system reveals, for the first time in the history of similar studies, some fundamental figures in this regard, including the precise numbers of existing glaciers in China. There are a total of 46,298 glaciers throughout the country, with 59,406 square kilometers in total area, distributed in Xinjiang, Qinghai, Gansu, Sichuan and Yunnan and Tibet. They preserve 5,590 cubic kilometers in ice storage, equivalent to 50,310 trillion cubic meters in water resources. Scientists estimate their melting water runoffs of the glaciers would be 61.6 billion cubic meters.

### CAS scientists score progress in forest pest studies

(CAS, 2007-04-11)



Teaming up with co-workers from State Forestry Administration (SFA), researchers of the CAS Institute of Zoology (IOZ) have scored encouraging progress in their studies of pheromones-based technology against the red turpentine beetle (*Dendroctonus valens* Le-Conte). This was announced at a press conference held by SFA on 4 April.

Native to North America, the pest has been recorded on more than 40 species of conifers. In China, it mainly endangers the oil pine (*Pinus tabulaeformis* Carrière), a major species for the country's afforestation. The beetle was first found in north China's Shanxi Province in 1998, and developed into a plague one year later in Shaanxi, Hebei and Henan provinces, where oil pines are largely planted. According to statistics in 2000, it infested more than 320,000 hectares of oil pine forests, killing more than six million trees.

By taking advantages of their research in pheromones, which are chemical substances making communication possible between living beings, IOZ scientists started studies of technology for controlling the beetle in 2000. Over the past years, with the support of SFA, the researchers have made breakthroughs. For instance, they have made clear the invasion biology and ecology of the pest, and revealed the mechanisms for its outbreak and host recognition, and chemical communications. In addition, high-performance semiochemicals, repellents and slow-released carriers for semiochemicals have been developed, and aggregation pheromone with remarkable synergism isolated. On the basis of the results, the scientists have also developed a comprehensive management system for monitoring, quarantine inspecting and controlling the beetle. So far the technique has been applied to 1,400,000 hectares of forests in Shanxi, Hebei, Henan and Shaanxi provinces, reducing the pest-stricken area by about 20%.

### China to develop five more oceanic survey satellites

(People's Daily, 2007-04-11)

China will develop five more oceanic survey satellites of three series in the next few years, China's top ocean research official said on Wednesday in Taiyuan.

Sun Zhihui, director of State Oceanic Administration made the remarks after the successful launch of self-made "Haiyang-1B" oceanic survey satellite from the Taiyuan Satellite Launch Center at 11:27 a.m. Wednesday.

**Help needed against climate change****(People's Daily, 2007-04-12)**

As developing countries become more vulnerable to climate change, China yesterday urged developed nations to speed up the transfer of resources in order to mitigate the impact.

In its latest assessment report released on Friday, the Intergovernmental Panel on Climate Change concluded that poor communities and developing countries are particularly vulnerable to climate change.

"I would like to appeal to developed countries to accelerate their funding for adaptation research and speed up the transfer of adaptation technology and cooperate with developing countries in working out solutions," Yang Xiongnian, a representative of the Ministry of Agriculture, said yesterday.

This will help developing nations better prepare for climate change and promote global sustainable development, he told the Asian Regional Workshop on Adaptation, sponsored by the United Nations Framework Convention on Climate Change (UNFCCC) in Beijing.

Yang's remarks echoed the latest call of the UNFCCC Executive Secretary Yvo de Boer.

"Our current sources of funding are insufficient to cover these adaptation needs," de Boer said on Friday.

"So the international community needs to investigate new and innovative sources of finance in order to ensure that the most vulnerable communities are able to cope."

The three-day meeting of experts is expected to identify specific needs and concerns in Asia where scientists predict a significant warming acceleration in the 21st century.

In China the trend will have a "mostly negative" impact and it will continue to wreck havoc in the country's ecosystems and on social and economic growth, Yang, the deputy chief of the ministry's Department of Science, Technology and Education, said.

For example, experts predict that crops in the plains of North and Northeast China could face water-related challenges in coming decades due to increases in water demands and soil-moisture deficits, according to documents released at the workshop.

According to one report released last year, the country's grain yield will be cut by 5 to 10 percent due to climate change.

"The reduction is equal to the annual grain productions of Central China's Hunan and Hubei provinces which are China's key crop-yield region," Li Yan, campaigner of Climate and Energy from Greenpeace Beijing office, said.

In addition to launching rainwater harvesting projects, China has pooled at least 20 billion yuan (\$2.56 billion) since 1998 to develop irrigation projects across the country, Yang said. The country has also tried to take advantage of climate change by implementing a northward shift of agricultural zones.

China's double planting regions have shifted northward by three-degree latitude while the boundaries of wheat and corn have expanded, according to ministry sources.

Ambassador Bagher Asadi, chair of the Subsidiary Body for Implementation of UNFCCC, said yesterday the meeting with representatives from 30 countries and regions should lead to practical recommendations on how the international community could respond to adaptation gaps and needs in Asia.

**Beijing dust-storm caused by dried salt lakes****(China News, 2007-04-12)**

The sandstorms in Beijing are actually "dust storms." The dust is blown to Beijing from dried salt lakes, wasteland, and degraded grassland, said experts from the Institute of Geology under the Chinese

Academy of Geological Sciences (CAGS) on Wednesday when attending an academic seminar.

Han Tonglin, a researcher from CAGS, said that on April 16, last year, a total of 336,000 tons of sand fell in Beijing in the form of a large sandstorm. After the sandstorm, he and his 7 other fellow researchers carried out an investigation in Hebei and Inner Mongolia. Later they wrote two reports on the research results titled “The Nature of the Sandstorms in Beijing and Tianjin and How to Handle Them” and “Proposals on the Beijing and Tianjin Sandstorms Handling Work.” The two reports aroused high attention from the State Development and Reform Commission, which later responded to their reports. Both reports give scientific analysis of the sandstorm happening in Beijing on April 16 from geological environmental perspective. The two reports conclude that the sandstorm that occurred on that day was caused mainly by dust in the dried salt lakes in Inner Mongolia, and some by dust from wasteland and degraded grassland. Since deserts and sand land contained little dust, they were not the sources for the sandstorm that occurred on April 16 in Beijing.

For the past 50 years, people in Beijing and Tianjin have tried to control sandstorms by planting many trees. However, this method has not been very effective. The reason is because the sandstorms in Beijing and Tianjin are not actually “sandstorms” but “dust storms.” The dust can be blown to 2,000-3,000 meters high in the air by wind before it falls down to the ground. Trees can not stop such dust at all, said Lin Jingxing, one of Han’s fellow researchers.

In order to prevent such dust storms, people should improve the ecological environment of dried salt lakes. Instead of planting trees, people should grow more grass on the earth.

### **China's Own Deep Sea Probe Equipment Triumph in Oceanic Research (MOST, 2007-04-15)**

Under the auspice of China Ocean Mineral Resources R & D Association and the Second Institute of Oceanography, State Oceanic Administration, Dayang Yihao (Ocean No. 1), the scientific research vessel set out to the Indian Ocean and netted major achievements. During the voyage, Chinese scientists for the first time discovered a new sea-floor hydrothermal field in the mid-ridge, the first active one ever discovered in the southwestern Indian Ocean ridge.

### **Yangtze water environment deteriorating: Report (China News, 2007-4-15)**

The 2007 annual report on Yangtze River protection and development shows that more than 600 kilometers of the river are in critical condition. The report says almost 30 percent of its major tributaries, including the Minjiang, Tuojiang, Xiangjiang and Huangpu rivers, are seriously polluted.

The report says the river's annual harvest of aquatic products dropped from 427,000 tons in the 1950s to about 100,000 tons in the 1990s.

A separate study by the Yangtze River Water Resources Commission shows cities along the river discharge at least 14.2 billion tons of polluted water every year, 42 percent of China's total.

Pollution, damming and too many boats have caused a dramatic decline in Yangtze aquatic life. While rare species such as the white-flag dolphin are thought to be on the verge of extinction, even common species such as carp are gasping for survival, the report said.

"The impact of human activities on the Yangtze water ecology is largely irreversible," said Yang Guishan, a researcher of the Nanjing Institute of Geography and Limnology under the Chinese Academy of

Sciences and one of the chief editors of the report. "It's a pressing job to regulate such activities in all the Yangtze drainage areas and promote harmonious development of man and nature."

The report, compiled by Yang's institute, the Yangtze River Water Resources Commission and the WWF, also warned of the higher flood risks.

The Yangtze accounts for about 35 percent of China's total fresh water resources but it's also responsible for 70 to 75 percent of the country's floods, the report said.

"Flood control remains an arduous task along the Yangtze, given the rising temperature and frequent occurrences of extreme weather over the last 50 years," said Yang.

Although the Three Gorges Dam, the world's largest water storage facility, has reduced flood risks in the middle reaches, the risk of flooding remains high in the lower reaches, he said.

The report also assessed the Three Gorges Dam project, showing its huge reservoir is seriously polluted by pesticides, fertilizers and sewage from passenger boats.

China allocated 4 billion yuan (513 million U.S. dollars) in 2002 to offset the impact of the dam on the ecology, the local environment and the local people, said Prof. Weng Lida, former head of the Yangtze River Water Resources Commission, adding that more cash is coming.

#### **China Earthquake Administration, Peking University establish seismology research center (People's Daily, 2007-04-18)**

China Earthquake Administration (CEA) and Peking University jointly established a seismology research center on Tuesday.

The two sides will carry out innovative research on key problems of seismology and related key technologies, so as to enhance China's innovative research ability in seismology, sources with CEA said.

The two sides will closely cooperate in teaching, research, and experiments and follow the edge-cutting seismological studies of the world, the sources said.

CEA is the main government body in charge of China's earthquake monitoring, prevention and rescue. Peking University is the first university in China to set up the discipline of geophysics and an important base for cultivating talents in seismology.

Establishment of the center is conducive to integrating quality resources and making contribution to China's disaster relief efforts, a statement from the university said.

#### **Scientists tend shoots of Virtual Herbarium (Xinhua Net, 2007-04-19)**

Scientists are working on the latest version of the Chinese Virtual Herbarium to provide easy access to an improved checklist of China's flora, said a botanist from the Chinese Academy of Sciences (CAS) on the fourth day of the Third Global Botanical Gardens Congress in Wuhan, central China on Thursday.

"We are putting together a third version of the herbarium with updated plant data and better-structured data bases," said Professor Ma Keping, director of the Institute of Botany, CAS.

He said that the Chinese Virtual Herbarium (CVH) was established in October 2004, with the first version base on specimens listed in the Flora of China, a national plant checklist of 30,000 plant species completed in early 2004. The second version saw daylight in September 2006.

More than two million regular specimens and 3,000 type specimens are now listed in the CVH, which has four modules including digitized specimens, a plant database, e-flora and photos, said Ma.

In addition, more than 27,300 plant color photos from about 3,784 species have been uploaded to the CVH, he said.

"We have also developed a search engine for major international herbaria and related databases," Ma said. They will complete the Catalogue of Life China in late 2007, which will include a national checklist of higher plants and vertebrates, and some fungi and bacteria, he said.

With assistance from foreign botanic gardens including the Missouri Botanical Garden and the Royal Botanic Garden Edinburgh, CVH version 3 will provide more convenient access, powerful search engines and better categorized data for users, Ma said.

### **First eco-friendly town to be built in Tianjin**

**(China News, 2007-04-20)**

The first eco-friendly town will be built in the Binhai New District of Tianjin. According to its development plan, the town will totally rely on clean energy like solar and wind energy instead of oil. All the houses here will be built with recyclable materials, and no heavy industries will be allowed to be built there.

"Eco-friendly towns can not change the world, but their seeds will grow into a forest in Tianjin, telling the world that the environmental crisis will come to an end if we work hard enough," said Eero Paloheimo, the Finnish scientist on eco-friendly urban planning at a seminar introducing the Finnish experience of building eco-friendly cities.

The development plan was initiated in June, 2006, and construction of the town will be completed in 10 years, when some 20,000 people will live there.

### **China urgently needs to protect wetlands**

**(China News, 2007-04-20)**

China will spend 16.5 billion yuan to protect and restore its wetlands during the 11th five-year-plan period (2006-2010).

Addressing a recent forum on the Yangtze River held in Changsha, the capital of Central China's Hunan Province, Zhu Lieke, deputy head of the State Forestry Administration, said China has made an inventory of 173 wetlands, most of which are in northeast China and the Yangtze River Valley.

Thirty of the country's wetlands are listed in the international wetland catalogue, and one third of them are situated along the Yangtze.

"Phenomena such as the rapid drop in the number of lakes and fast shrinkage in lake area got worse as China's economy tears through resources," said Zhu, who warned that wetlands in the Yangtze River Valley face unprecedented ecological threats.

"The problems that plague wetlands in the Yangtze River Valley include pollution, ecological degradation and dwindling water resources," said Zhu. "The protection of our wetlands is urgent."

The 6,300-km-long Yangtze, the country's longest, originates in the Tanggula Range on the Qinghai-Tibet Plateau and passes through Qinghai, Tibet, Sichuan, Yunnan, Chongqing, Hubei, Hunan, Jiangxi, Anhui, Jiangsu and Shanghai before emptying into the East China Sea.

Wetlands in the Yangtze River Valley include salty plateau lakes and plateau marshlands, the galaxy of lakes on the middle reaches of the Yangtze, and the coastal wetland near Chongming Island at the estuary of the river.

Dongting Lake, which flows into the Yangtze River and also serves as an important wetland, for instance, is shockingly polluted. Marine life has been decimated and people are catching a disease called schistosomiasis -- caught by swimming or wading in water where there are parasitic worms.

The water area of Dongting Lake has shrunk from 4,350 sq km in 1949 to present 2,625 sq km as a result of silting and land reclamation for farming.

According to Zhu, the country has already launched three programs to protect the wetlands in the Yangtze River Valley, including the national program for conservation of wildlife, plants and nature reserves, and the program to protect the Sanjiangyuan wetland in Qinghai Province. But much remains to be done.

### **Invasive species cause big economic loss in China**

**(Xinhua Net, 2007-04-21)**

Invasive plant species have brought hazards to rice, wheat, corn and other crops in China and caused big economic loss, said a scientist with the Chinese Academy of Sciences (CAS).

Invasive species have reduced the output of rice, wheat, corn, sweet potato and lettuce in some areas of China by 19 to 63 percent, said Ding Jianqing, a researcher with the Wuhan Botanic Garden of CAS.

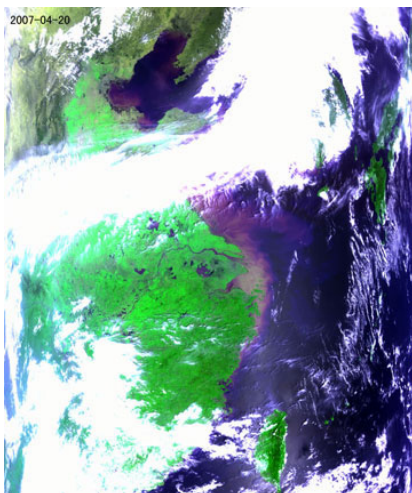
Water hyacinth is also posing a serious problem in rivers, lakes and ponds in south and southeast China's Guangdong and Fujian provinces, southwest China's Yunnan Province, east China's Jiangsu and Zhejiang provinces and in Shanghai, said Ding. He said invasive plant species include both Chinese and foreign species, which have been introduced into an area where they are not native by human activities and have established a self-reproducing population in a local natural or artificial ecosystems. Some of them will change and even damage the natural ecosystem.

There are more than 280 foreign invasive species of plants and animals in China, with 18 aquatic plant species and 170 terrestrial plant species. Half of the species are from America and about one-fifth from Europe. Statistics show that invasive species have caused a total economic loss of 14.45 billion U.S. dollars in China between 2001 and 2003, with direct and indirect economic losses accounting for 16.5 and 83.41 percent.

"A national monitoring system should be set up to observe economic losses that invasive species bring about to agriculture, forestry, stockbreeding, fishery and human health," said Ding.

### **Images from Satellite Haiyang-1B**

**(CRI, 2007-04-23)**



China's ocean monitoring satellite, "Haiyang-1B" (Ocean 1B), is functioning well and data transit tests have been successfully carried out, the state oceanic authority said on Friday.

The China-made satellite, which monitors the color and temperature of the ocean, went into the orbit on April 11 aboard a Long March-2C carrier rocket.

The data collection center in Beijing received the first batch of signals from the satellite on Friday morning. "The satellite is in good condition and working well," said Jiang Xingwei, director of the National Satellite Ocean Application Service.

**Nanhai-I exploration enters final stage****(China News, 2007-04-24)**

The exploration of the famous shipwreck, *Nanhai-I*, has entered the final stage recently. More than 300 complete or nearly complete pieces of cultural relics have been found in the sea areas around it in the last series of investigations, including 235 metal artifacts of 20 sets, 50 pieces of chinaware of 40 sets, and 15 pieces of stoneware and japan.

*Nanhai-I* was a merchant ship in the Southern Song Dynasty (1127 - 1279), and it is the oldest, biggest and the best preserved offshore trading ship hitherto discovered in the world, with more than 60,000 cultural relics having been found on or near the ship.

Archeologists believe that *Nanhai-I* used to play an active part on the "Maritime Silk Road", and it will provide precious material information for the research of the nautical history of China, as well as the history of ship-and-china-making of this country.

After checking the condensate from the shipwreck, archeologists were surprised to find quite a number of new cultural relics, including a 3-m-long stone anchor of diamond shape, two gold-plated bracelets with a dragon pattern and a japan wood box. The bracelets are luxuriously designed, and very well preserved. 800 years under the sea has not harmed their beauty at all.

The container of the shipwreck will arrive at the scene at the end of April, 2007, and the entire ship will be dragged out of the sea in June or July.

**Report examines the Yangtze's "health"****(CAS, 2007-04-25)**

The Yangtze River is experiencing a crucial transition in its conservation and development that is faced by many problems and challenges, according to the Yangtze Conservation and Development Report released on April 14 in Changsha, capital of central China's Hunan Province. High-ranking officials and celebrities including CAS Vice President LI Jiayang and Director General of WWF International James P. Leape were present at the event.

Compiled by more than 30 experts from CAS, WWF, and Yangtze Forum Secretariat, the 270-paged report is the

first comprehensive study outcome of such kind that thoroughly examines the "health" of the Yangtze. The "health-check" is focused on four major water-related issues, including water resources, water calamity, water environment and water ecosystem, indicating that future ecological and social development of the river could be bottlenecked by new challenges.

The Yangtze is not only the cradle for the Chinese civilization, but also an important life line for China's sustainable social-economic development, linking east and west part of China with a radiating impact on the south and north, says, Li Jiayang. Although China has made significant progress in its efforts to promote the development and protection of the River over the past 50 or so years, it is now plagued by a series of problems in this regards, such as worsening natural disasters, deteriorating pollution, ecological degradation, damages in natural resources. By giving a systematic overview of the conservation and

development tendencies involved in the River, and an objective observation of the current challenges and potential threats facing the efforts, the report promotes the exchanges between scientists and decision makers, and offer authoritative information for the general public to have an overall understanding of the issue.

According to the report, the lack of a well-coordinated and integrated development mechanism stands to be a prominent issue in conservation to mitigate the negative impacts upon the natural resources and environment resulted from the less rational planning and over exploitation for economic development along the river. The river-lake reconnection in its middle and lower reaches is also necessary to restore and protect the linkage and integrity of the river-lake ecosystem.

It also pinpoints that the Yangtze River, the largest one in China, is under steep pressure as threats of natural disasters, water quality deterioration and biodiversity loss are mounting up. Biodiversity degradation is continuing due to the worsened environmental conditions by people's imbalanced activities. The middle and lower Yangtze is periled by potential catastrophic floods as how the Three Gorges Dam would function in flood control under today's circumstance of global warming remains uncertain.

To tackle the issues, the report suggests that a regional reform of the current governing body is needed to improve the integrated river basin management (IRBM). This should involve wider participation of all stakeholders including the central government's agencies, local governments and communities along the river, businesses and experts into the decision-making process to well balance conservation and development. Channels like the Yangtze Forum are also needed to enrich the conservation approach through a well-functioning mechanism of better discussion and communication.

"The report objectively and systematically probed into the past, current and future facts of the river's conservation and development, which is important for the conservation of the Yangtze during development," said Dermot O' Gorman, Country Representative of WWF China.

Released one day prior to the second Yangtze Forum scheduled in Changsha, Hunan Province from April 15 to 17, the report will be updated every two years in the future.

### **Studies reveal sources of fog drip in tropical rainforests**

**(CAS, 2007-04-25)**



The frequent occurrence of radiation fog appears to play an important role in the hydrological cycle of the tropical rainforest in Xishuangbanna. The fog drip, as compared with the other waters, was consistently more enriched, and yielded a higher value. Radiation fog appears to be produced mainly through evaporation from a pond, river, and soil plus forest evapotranspiration, especially during the dry season.

With the support of National Natural Science Foundation of China, Dr. LIU Wenjie and his colleagues from the CAS Xishuangbanna Tropical Botanical Garden carried out a 3-year stable isotopic analysis by collecting fog drip, rainfall, throughfall, stemflow, stream water, river water, pond water and soil water at the rainforest site in Xishuangbanna. Related research achievements with the title of "Using stable isotopes to determine sources of fog drip in a tropical

seasonal rain forest of Xishuangbanna, SW China" has been recently published in *Agricultural and Forest Meteorology*, 143 (1-2):80-91.

**Sea levels rise average of 1-3 mm in China****(CAS, 2007-04-25)**

The temperature has increased between 0.5 and 0.8 degrees centigrade in China over the last 100 years. Since the 1980s, the sea level along China's coastal regions has risen on average 1 to 3 millimeters per year. Spring phenology advanced 2 to 4 days. The coral bleaching phenomenon has occurred in the South Sea Coral Reef due to rising sea temperatures. The 4th Assessment Report of the Asian Regional Press Conference of the Intergovernmental Panel on Climate Change (IPCC) Working Group II, which was held today, found that higher temperatures are having an increasing influence on nature and society.

Qin Dahe, the chairman of IPCC, said that temperature increase have had a big impact on the environment and the socio-economy. Some confirmed impacts include: the retreat of the glaciers in China's northwest, the thinning permafrost, the increase in the surface area of the inland plateau lakes, the decrease in grass production of some rangelands. The northern drought stricken area has expanded, agricultural losses are increasing; there are floods in the south and increasing losses of economy and life.

**Warning, Bohai Sea is dying!****(China News, 2007-04-25)**

According to a report by CCTV, pollution is killing Bohai Sea in the Circum-Bohai Economic Ring, one of the fastest-developing economic zones in China. It is estimated that Bohai Sea will be dead in no more than 10 years, if nothing is done to control the pollution.

According to the investigations by the National Oceanic Administration, 80% of pollutants in Bohai Sea are from the coast around it. Bohai, which only covers 2.6% of the total sea area of China, devours 40% of sewage discharged to the ocean. About 47% of the total volume of pollutants dumped into the ocean is also dumped here.

Bohai Sea used to be a major fishing ground, particularly famous for its hairtails, which can hardly be found nowadays. Rampaging pollution has led to several fatal red tides already.

"The ecological function of Bohai as a sea is partly lost now, with more and more of it being polluted, particularly in the sense of fishery," said Gao Zhiguo, the director of the Institute of Development Strategies of the National Oceanic Administration.

Statistics also reflect that 81% of drain pipes on the coast around Bohai Sea release much more sewage than they are allowed into Bohai Sea, not to mention 70% of such pipes are located in tourist resorts, nature reserves and mariculture zones.

Bohai Sea, being a closed gulf, has very poor self-purification ability. Statistics show that it takes at least 16 years for Bohai Sea to complete a water exchange cycle. In a word, China must stop polluting Bohai Sea as soon as possible.

## **1.3 Health**

### **More breast cancer patients from cities in China**

**(China News, 2007-04-03)**

Currently the incidence rate of breast cancer is 18.7 per 100 thousand, and in Shanghai the rate is 61.2 per 100 thousand. Shen Dianyu from Shanghai Tumor Hospital and Jiang Zefei from Beijing No. 307 Hospital said last Sunday that one million people new breast cancer patients appear annually in the world, most of them in China.

The doctors said there are more breast cancer patients in urban areas than in rural areas, most of them being aged from 45-50, 5 years higher than patients in Europe and America. Factors contribute to breast cancers, are heredity from families, too much absorption of fat and estrogen, etc. They stressed that the fast pace of industrialization and urbanization is also attributable to the high incidence of breast cancer in China.

### **Project on plasticity in brain structure kicks off**

**(CAS, 2007-04-10)**

Studies on plasticity in brain structure and function, a flagship project of China's basic science research during the 11th Five-year Plan Period, has been started recently in Shanghai. With support from the National Basic Research Program (dubbed as "973 Program"), the project will be carried out under the organization of the Institute of Neuroscience (ION), the CAS Shanghai Institutes for Biological Sciences (SIBS).

At its launch meeting held on 14 February in Nanbei Lake, Zhejiang, Prof. GUO Aike, chief scientist of the project and a researcher from ION, gave a general introduction, and leaders of the six components of the project presented their research plans. Prof. PEI Gang, SIBS president, and members of the project's expert panel attended the meeting and offered comments and suggestions.

### **China launches new lab for respiratory diseases in Guangzhou**

**(People's Daily, 2007-04-10)**

China's Ministry of Science and Technology has approved a new laboratory in Guangzhou to bolster research into respiratory diseases, sources with Guangzhou Medical College said on Tuesday.

The State Key Laboratory of Respiratory Diseases would be inaugurated in April or May after the ministry completes a feasibility study, said Zhong Nanshan, a SARS expert and president of the Chinese Medical Association.

The lab would carry out advanced research and develop new drugs and vaccines, said Zhong, who earned his reputation through his efforts to curb the Severe Acute Respiratory Syndrome (SARS) virus in 2003.

The new institution would be based on an existing research facility co-sponsored in 2005 by the Biomedicine and Health Institute of the Chinese Academy of Sciences and Guangzhou Institute of Respiratory Diseases, he said.

The old facility had been fruitful in its research into flu, bird flu, lung cancer and asthma.

"It will be expanded to 7,600 square meters from the current 4,600 square meters," Zhong said. "It will seek cooperation and exchanges with other countries and will hopefully make breakthroughs in treating

and preventing epidemic outbreaks."

The new lab would also have the country's largest ward for respiratory disease sufferers, accommodating up to 300 in-patients.

The Ministry of Science and Technology is to send an expert panel to Guangzhou next month to oversee the construction.

The World Health Organization estimates about one billion people suffer chronic respiratory diseases worldwide and more than four million die annually.

Respiratory diseases were the biggest single killer of Chinese rural dwellers in 2005, the most recent year that data was available, and was the fourth killer in cities.

"The SARS and bird flu outbreaks in recent years triggered panic and caused huge economic losses across the globe," said Zhong. "It's therefore important for scientists to boost research capacities and develop more effective diagnostic devices, medication and vaccines."

### **First boer goat with somatic cell cloning tech born**

**(China News, 2007-04-10)**



China's first boer goat born with somatic cell cloning technology, the second boer goat born with such technology in the world, was produced at the Tianjin Pasturage and Veterinarian Research Institute at 12:40 on Monday, the *Beijing News* reported.

On Monday afternoon, this reporter saw the little goat at the lab base in the Tianjin Pasturage and Veterinarian Research Institute. The new-born goat was white in color and had a brown head, a typical feature of the boer goat. The parent goat had white hair all over its body. The baby cloned goat is named "Jin Ying," which means the "hero in Tianjin".

The somatic cell cloning boer goat project was led by Liu Ling, a Chinese American cloning expert. The project was kicked off in 2000. In 2003, scientists injected the ear skin cells taken from an Australian boer goat ( the goat died in 2003) into the egg cell of an ordinary goat after scientists took out its cell nucleus. Scientists then transplanted the cloned embryo into the body of a receptor goat. Through hundreds of experiments, scientists finally managed to transplant the cloned embryo into the body of an ordinary female goat. After 155 days of pregnancy, the female goat produced a 5.5-kilogram female baby goat, which carried the same genetic information as the original boer goat.

Since Jin Ying was large physically, scientists had worried that it might die before it was born, or might have some sequelae after it was born. So scientists had intended to give a Caesarean operation to the mother goat. In the end, the baby cloned goat was delivered smoothly in one hour on Monday morning.

### **Chinese scientists identify gene controlling rice size, weight**

**(Xinhua Net, 2007-04-12)**

Chinese scientists have successfully identified a rice gene that controls a grain's weight and are experimenting with the new discovery to boost grain yield.

The previously unknown gene, called GW2, is responsible for limiting a grain's size and weight, said

scientists with the National Key Laboratory of Plant Molecular Genetics in Shanghai.

Lin Hongxuan, one of the researchers, said a weaker dominance of the gene could speed up the splitting of grain cells and enlarge the size, which would lead to higher weight and output.

Scientists have picked out the gene in existing large-grain varieties in which the GW2 gene is relatively recessive and introduced it into small-grain varieties.

This led to new varieties from grains larger than the original. Though each rice spike contained less grains as they grew larger and heavier, the overall weight still increased markedly.

It would be certainly valuable for improving grain yield, but it was too early to predict how it would enhance the rice output if applied in paddy field.

Their research results have been published on the website of Nature Genetics, whose judges described it as a landmark discovery in rice cultivation.

Earlier reports said the research team of Lin, Song Xianjun and Huang Wei had also identified the gene controlling the grain's quantity.

They were also working on that gene in the hope of controlling both quantity and quality and producing varieties with higher yields.

### **Antibiotics severely abused in China**

**(China News, 2007-04-14)**

Statistics show that half of the inpatients in China have been given antibiotics for treatment of their ailments, while the figure in other countries is only 30%, which fact indicates that there is the medication safety problem to be addressed in China.

"Antibiotics are perhaps the most frequently used drugs in China, and they are much more expensive than in developed countries, compared with the income of Chinese and Westerners," said Wang Rui, the director of the Institute of Pharmaceutical Clinical Pharmacology of the PLA General Hospital, and a member of the Antibiotics Professional Committee of the Chinese Pharmaceutical Association.

"The abuse of antibiotics is not only a waste of medical resources, but it will also enhance bacteria's resistance to drugs, not to mention that antibiotics are poisonous as they might lead to fungal infection," said Wang.

The main reason for hospitals to abuse antibiotics is profit. It is said that 80% of drugs in China are sold via hospitals, and antibiotics, with mature production technology, can usually generate considerable profit. Furthermore, many patients are misguided by ads, and trust antibiotics blindly, without knowing whether antibiotics can help them or not.

### **China tops world in liver autotransplantation**

**(China News, 2007-04-14)**

From now on, liver disease patients no longer have to worry about liver donating-shortage problem: they can help themselves with their own livers. On Thursday, the Xiang Yasan Hospital affiliated to the Zhongnan University announced that Professor Ye Qifa in their hospital had accomplished four liver transplanting operations with the patients' own livers after the diseased part had been cut off. The medical method has reached world advanced level, declared the hospital.

For a long time, many terminal liver cancer patients have had to rely on somebody else's liver to solve their problem. Usually, doctors cut off the entire liver of the patient and transplants the liver of another

patient who is brain dead.

For autotransplantation, the doctors first cut off the diseased part of the liver and move the rest part back into the patient's body after they had fixed it. Since 1988, doctors in Germany, US, and Italy also have carried out similar researches on autotransplantation. However, the survival rate has not been high, Professor Ye said.

In recent years, Professor Ye and his research team had done numerous animal tests before they applied the technology to clinic trials. On April 29, 2005, Professor Ye and his research team performed the first autotransplantation surgery. The patient, a farmer in his 30s, had taken a liver resection surgery in 2000. Later, he suffered from liver cancer again and had to stay in hospital. After the autotransplantation surgery, the patient recovered from his disease. Now, he no longer relies on medical treatment. He even goes to work in the fields as normal people do. The other three patients who took similar surgeries have also recovered now.

In order to save more patients, Professor Ye now wants to give lectures to doctors and nurses from various parts of the country. He has already filed an application for related organizational work to the Ministry of Health.

#### **Anti-HIV drug set for clinical testing**

**(People's Daily, 2006-04-17)**

A new anti-HIV compound developed by Chinese scientists has been licensed for clinical testing on the mainland.

The drug, named Nifeviroc, looks set to become China's first entry-inhibitor for HIV treatment. It has been jointly developed by Pei Gang, a scientist at the Shanghai Life Sciences Institute, and Ma Dawei, a scientific researcher with the Shanghai Institute of Organic Chemistry. Both institutes come under the China Academy of Sciences.

Ma said that Nifeviroc works by inhibiting CCR5, a protein that commonly exists on the surface of human immune cells.

"The CCR5 protein provides a medium through which the HIV virus can infect healthy cells. By deactivating the protein, the virus can be stopped before it enters the cell," Ma said.

Early tests have indicated that Nifeviroc has promising anti-virus capabilities and few side effects. Hopes are therefore high that it can provide an effective barrier against the HIV virus.

The drug, which is taken orally, can be used on its own, or as part of a cocktail therapy.

The world's scientists first turned their attention to CCR5 in the mid-1990s.

An American company is currently involved in third-phase clinical testing of a drug with a similar mechanism to Nifeviroc, and this is expected to become the world's first oral HIV entry-inhibitor.

It will be a further three to five years before Nifeviroc is ready to be put into clinical use, the scientists said.

Pei and Ma have so far spent six years on the development of the drug. "It is perfectly normal for the development of a new drug to take 10 years or more," Ma said.

Chen Li, general manager of Target Pharmaceutical Co Ltd - co-founded by the two science institutes and Fudan Zhangjiang Bio-Pharmaceutical Co Ltd, said: "China generally lags behind the West when it comes to the development of pharmaceuticals, but Nifeviroc has an independent intellectual property.

"According to laboratory test results, its effects were just as good as those achieved by the American

scientists."

Chen said Nifeviroc would also be cheaper than other drugs available. "The price will definitely be lower than foreign drugs," he said.

Ma said that a cooperation contract for the international marketing of Nifeviroc had recently been signed with an Australian firm.

"Chinese pharmaceutical companies do not have the experience to effectively market a drug like this on a global scale," Ma said.

"We are not familiar with the different regulations and laws each country has, and we also need help with funding.

"However, when the drug is introduced on to the market, we will be paid for the intellectual property rights and also get a percentage of the sales revenue," Ma said.

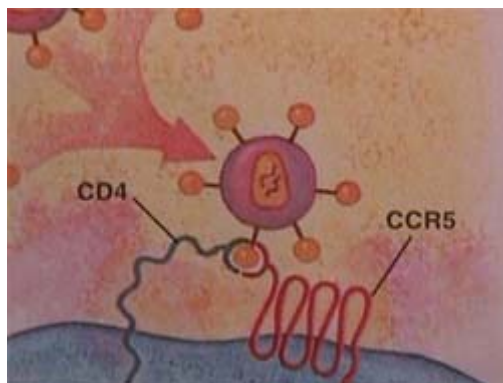
### **Xiangshan Science Conferences to address health hazards of radon (CAS, 2007-04-18)**

With an objective of offering scientific evidence for the formulation of national strategy for radon exposure mitigation, the 304th session of the Xiangshan Science Conferences will convene from 19-21 June in Beijing, addressing health hazards of radon, thoron, their daughters and their control.

Radon and its daughters are present in all working and living environment, accounting about 50% of people's annual exposure to natural radiation on the globe. According to estimation by the International Commission on Radiological Protection (ICRP), about 10% of lung cancer incidences among the general population are caused by the radioactive gas that is released from the normal decay of uranium in rocks and soil. The World Health Organization listed it as one of 19 substances causing cancer. The International Agency for Research on Cancer (IARC) rates radon as a Class I carcinogenic factor. Studies by United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR) estimated that lung cancer risk to be raised by 16 per cent for every 100 Bq/m<sup>3</sup> of radon present in the home.

In China, nearly 100 million poverty population is exposed to high activity concentration of radon, according to experts. Recent studies in China's 26 cities show that the activity and concentration of radon has remarkably increased, about 80% higher than that in 1980 in general. Radon exposure level of the people working underground is also high.

### **Anti-HIV drug development on the fast track (CAS, 2007-04-24)**



An international cooperation deal was made recently in Shanghai on developing a new anti-HIV drug based on the research results of CAS scientists and their preclinical studies, marking a breakthrough progress for China's research in the field.

According to the agreement inked on 15 April between TargetDrug, a Shanghai-based drug firm backed by CAS, and Avexa, a Melbourne-based pharmaceutical company, the two sides will join forces in the follow-up development of Nifeviroc, a promising drug candidate for the treatment

of AIDS, and its global distribution.

The anti-HIV drugs now commonly used in clinical practice are to act on the life cycle of the HIV virus after their invasion of the healthy cells, with an objective of reducing complications of the patients and elongating their lives. However, they have defects, such as low bioavailability, high toxicity, unbearable side effects, high costs and rapid development of viral resistance. Recently, scientists are thinking to develop new drugs against the initial entry of the virus into human cells.

Set to be China's first entry-inhibitor for HIV-virus, Nifeviroc works by restraining CCR5, a protein that commonly exists on the surface of human immune cells. The protein plays a critical role in mediating the HIV virus entry and facilitating viral fusion with the cells, which is the initiation of life cycle of HIV. As a small molecular compound, the anti-HIV capacity of Nifeviroc was jointly approved in 2003 by PEI Gang from the Institute of Biochemistry and Cell Biology under the CAS Shanghai Institutes for Biological Sciences (SIBS) and MA Dawei from the Shanghai Institute of Organic Chemistry (SIOC). The researchers attribute the feat to the interdisciplinary studies of biology and chemistry, which enable them to ferret out several bio-molecules as promising candidates for anti-HIV drugs.

Preclinical study results indicate that Nifeviroc is of both potent efficacy and impressive safety profiles, according to researchers. It also shows, in pharmacodynamic studies, strong anti-viral activity against various HIV strains, especially when tested against those that are multi-drug resistant. Further pharmacokinetic studies confirm its oral bioavailability, and safety studies find that it causes no serious treatment-related toxicity either in an acute study or in a chronic state.

In order to speed up the follow-up development, Targetdrug was established as a spin-off of SIBS and SIOC. The firm has completed pre-clinic research work on Nifeviroc and received endorsement from the National Food and Drug Administration for clinical research to begin early this year. So far, Targetdrug has applied for patents for Nifeviroc in 14 countries and regions, including the United States, Japan and the European Union.

"In the field of basic research," Prof. Ma comments, "there is a group of competent Chinese scientists who have made research fruits up to the advanced international level. But, what we are lacking hereby is a success in commercialization of their results as we need to have an institutional mechanism sound enough and compatible with the conventional practice exercised by the international community in this regard."

"Through cooperation with Avexa, we hope to bring our brainchild into the world market in an efficient way," notes Prof. Pei, who is also SIBS president.

Following the agreement with Avexa, Targetdrug will possess the rights for developing Nifeviroc in China. Avexa will take charge of post-research expenses, develop it in the international marketplace and share global benefits with Targetdrug.

"The provisions in the protocol were formulated in line with the international conventions in the course when a new drug is being developed. Our objective is to speed up the developing tempo of the candidate by taking advantage of a professional and overseas R&D platform with a higher starting point," notes CEO of TargetDrug CHEN Li, "On the other hand, this is an attempt to blaze a new trail, unclogging a channel accessible to the international market."

**Chinese Experts Identify Cancer-Preventing Gene Type**  
(CRI, 2007-04-24)

Scientists in China have identified a gene variant which appears to protect Chinese people from various types of cancer.

In the latest issue of the journal *Nature Genetics*, the experts said they had studied the DNA of nearly 10,000 Chinese people over 6 years and had found that the gene variant appeared far more frequently in those who were cancer-free.

"We have identified a variant of the CASP8 gene that appears to be associated with lower risk of lung, esophageal, gastric, colorectal, cervical and breast cancers in Chinese people," Dongxin Lin of the Chinese Academy of Medical Sciences in Beijing wrote in an e-mail to Reuters.

It is well known that the gene caspase-8 (CASP8) regulates cell death. Programmed cell death, or apoptosis, is important because it prevents cells from dividing and spreading uncontrollably, a process that can result in cancer.

However, scientists know little about the variants of this gene and the roles they play in cancer susceptibility.

Between January 1997 and July 2003, researchers in various cancer institutes in Beijing examined the DNA of 5,000 patients with lung, esophageal, colorectal, cervical, stomach and breast cancer, and 4,972 others who were cancer-free.

The gene variant showed up in 25 percent of those who were cancer-free, and in 20 percent of those who had cancer.

Explaining how this gene variant might have benefited its carriers, Lin said: "Carriers may have lower apoptotic cell death of T lymphocytes (white blood cells) when they fight with malignant or premalignant cells."

"The immune status is very important in cancer development, and genetic variation in the immune system is associated with predisposition to cancer," Lin said.

The discovery may help identify high-risk individuals. "The genetic variant we identified might (serve) as a genetic marker in identifying high-risk individuals, which is an important step in targeted prevention and early detection of human cancer," Lin said.

Cancer is a leading cause of death worldwide. It accounted for 7.6 million, or 13 percent, of a total of 58 million deaths worldwide in 2005, according to the World Health Organization.

WHO projects that figure rising to 9 million in 2015 and 11.4 million in 2030.

### **Research gains insight into the guidance mechanism of neuronal migration**

(CAS, 2007-04-27)



Neuronal migration, a process in which neurons travel a large distance from the areas where they are born to different parts of the brain where they will settle in their final positions, plays a critical role in early brain development. Although scientists have found that defective neuronal migration leads to a broad range of clinical syndromes, and most of those affected will have mental retardation and epilepsy, mechanisms behind the migration are yet well understood. Recent research by CAS researchers has shed new light on the understanding

of the issue at the molecular level.

Ever since the late 1800s, when neuronal migration in mammalian nervous system was observed, a large amount of work have been carried out to explore the ways by which neurons are guided for their migration and how brain structures discriminate between cell populations by discouraging specific classes of neurons from invading wrong territories. One hundred years later, in 1999, researchers revealed that there are diffusible molecules in the brain which can guide the direction of migrating neurons; specifically, a secreted protein called *Slit* is repulsive to neurons and its concentration gradient guides neuronal migration. However, an interesting question is the mechanism within the cell to sense and response to the guiding molecules.

As reported online in *Cell* on 19 April, GUAN Chenbing (Chen-bing Guan), a PhD candidate under guidance of Mu-ming Poo and YUAN Xiaobing from the Institute of Neuroscience, Shanghai Institutes for Biological Sciences, has found that migratory neurons, which are highly polarized, need a long-distance signal transmission within the cell to coordinate the translocation of different parts of the entire cell body. Their five-year-long study shows that the leading growth cone of migrating cerebellar granule cells is responsible for sensing the extracellular repulsive guidance signal *Slit2*. In response to *Slit2*, a cytoplasmic Ca<sup>2+</sup> wave, a form of signal transmission within a cell, propagates from the growth cone to the cell body and this wave is both necessary and by itself sufficient for *Slit2*-induced reversal of neuronal migration. Furthermore, the reversal of migration requires the activity of the signaling protein called the small GTPase RhoA and is accompanied by a front-to-rear redistribution of the RhoA activity. Studies of neuronal migration are important for revealing the mechanisms underlying the formation of the normal nervous system, for understanding the etiology of human diseases caused by abnormal migration and for designing therapeutic approaches to the treatment of these diseases.

### CRP criteria in West may not suitable for risk assessment of cardiovascular disease in Chinese people

(CAS, 2007-04-30)



A study by CAS scientists indicates that the C-reactive protein (CRP) is a strong independent risk factor for metabolic syndrome (MetS) in Chinese population.

CRP is the most extensively studied biomarker of low-grade inflammation, and compelling evidence has shown that mildly increased CRP is a predictor for cardiovascular disease (CVD), type 2 diabetes and MetS in healthy people. A recent prospective study showed that the circulating CRP level is more effective than low-density lipoprotein (LDL) to predicate subsequent cardiovascular events. Thus, measurement of CRP has been recommended to assess risk for CVD primary prevention

by American Heart Association (AHA) and the US Centers for Disease Control and Prevention (CDC). However, CRP levels vary among different populations and most studies have been conducted in Western populations. Little is known about the CRP distribution and its relation with MetS and CVD among Chinese.

New discoveries in this aspect have been released in a recent issue of the *Journal of the American College of Cardiology* by a research team led by Prof. LIN Xu with the Institute for Nutritional Sciences, the CAS Shanghai Institutes of Biological Sciences, as a part of the study from their research project titled "The Nutrition and Health of Aging Population in China." Their work leads to the following findings:

Firstly, the overall CRP level is low among the middle-aged and older Chinese population, in consistent with two previously multiethnic studies, in which the blood levels of CRP in the Chinese living in US and Canada were substantially lower than those of Caucasian, African-Americans and Hispanic, but slightly higher than that of Japanese. In addition, it was found that CRP levels varied by geographic location even within Chinese.

Secondly, 3-fold higher MetS risk was observed for the individuals with the highest CRP levels than those with the lowest CRP concentration. The positive association between CRP and MetS was independent of lifestyle factors, body mass index and other known confounding factors. It was worth to notice that approximately 50% of study participants with MetS had CRP levels within "low risk" range for subsequent CVD according to the criteria proposed by AHA/CDC. MetS characterized as a concurrence of metabolic abnormalities is well established as a risk factor for CVD and type 2 diabetes. Therefore, elevated CRP level could link to a higher CVD risk in Chinese people.

Finally, obesity is a pivotal mediator for the association between CRP and the MetS in this population and individuals with higher CRP and obesity showed exceptionally higher risk. However, the increased CRP per se was highly associated with the MetS, as indicated by increased risk in the individuals with normal body weight but high CRP level. Together, the present study suggests that the high CRP level is an independent risk factor for MetS in Chinese people and certainly further studies with prospective nature are needed to verify whether the suggested cutoff points for CVD are suitable for Chinese people.

## 1.4 Key Technologies

### **Inception Meeting Held on High Performance Computer and Grid Service (MOST, 2007-04-02)**

The inception & 1st working meeting on high performance computer and grid service environment, a major project under the 863 Program in the 11th Five Year Plan was held in Beijing recently. The event was attended by some 70 participants from MOST's Department of High and New Technology Development and Industrialization and the High Tech Research and Development Center, the general expert panel, project teams, and users from the industrial circle.

The project teams compared notes on the objective and mission of the project and how to develop the project. In-depth discussion touched on grid service software, grid environment, building nodes and grid application and concluded with suggestion and demand on the design, development and application of grid software, the deployment of grid services, and the test environment of wide spread grid.

### **China succeeds in quantum cryptography network test (Xinhua Net, 2007-04-02)**

China's first quantum cryptography network has been successfully tested in Beijing, the Chinese

Academy of Sciences announced on Monday. The commercial communication network of the Chinese Network Company (CNC) was used to test the quantum network.

The testing was carried out by the Key Lab of Quantum Information under the University of Science and Technology. Leading scientist Guo Guangcan said that current cryptography faces challenges from quantum computers, because theoretically all codes can be deciphered.

But quantum information cannot be copied and any interception of quantum information is easily discovered, Guo said, adding that the new quantum cryptography is therefore "absolutely safe" and proof against decoding.

The research group successfully completed a 125-km fiber point-to-point quantum key distribution (QKD) experiment between Beijing and Tianjin in 2004, which solved the problem of stability in quantum cryptography systems.

### **New desulfurization route underlined**

**(CAS, 2007-04-06)**

A research report, "Emulsional catalytic oxidation ultra-deep desulfurization with molecular oxygen," which was published in *Chem. Commun.* (150-152, 2007) by a research team at the CAS Dalian Institute of Chemical Physics, has been highlighted as one of the "Heart Cut" items in the ACS journal.

Earlier, another work of the team, "Emulsional catalytic ultra-deep oxidation desulfurization with hydrogen peroxide" published in *Chemistry*, a European journal, was given prominence by the journal of Green Chemistry of Royal Chemistry Society of England as a high-lighted article in the area of green chemistry.

This new desulfurization route has been established as a cooperative program for commercialization between DICP and SINOPEC and other enterprises.

### **Next-generation homemaking robots developed**

**(China News, 2007-04-19)**

A company in Shenyang has successfully developed the first two next-generation homemaking robots in China, which will be put into production in July, 2007. It is estimated that the general public will be able to enjoy their service in the next 5 years.

The name of the two robots are Yue Yue and Liang Liang. 0.8 m tall and 25 kg heavy, they are capable of performing functions of teacher, entertainer, security guard and personal assistant.. Their silver-gray appearance makes them look very modern and lovely.

They act according to voice instructions of their owners. They can talk, though in simple words, not telling stories and singing. If there is a gas or a tap water leak, they will send short warning messages to the cell phone of their owners while sounding alarms.

Yue Yue and Liang Liang can also work as family tutors, for they can record lessons in their memories, and play back at any time. With a user-friendly graphic interface, they can also make their user forget notebooks and PDAs.

"We are developing new models with legs and hands at present. In the future, the homemaking robots will become real qualified homemakers," said Ha Enjing, the director of the Development Department of the company.

**China's progress in separation science highlighted**
**(CAS, 2007-04-27)**

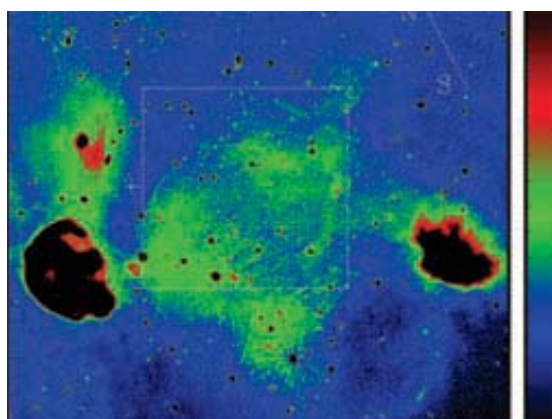
A special issue devoted to the progress achieved by China's separation science was published recently by a world-renown periodical *Journal of Separation Science*. It is co-edited by Prof. ZOU Hanfa from the CAS Dalian Institute of Chemical Physics as a guest editor, and Prof. Frantisek Svec, professor of UC Berkeley and a senior editor.

"Chinese scientists are now the major group of contributors of papers concerning separation science published in prominent international journals such as *Analytical Chemistry*, *Electrophoresis*, *Journal of Chromatography*, and *Journal of Separation Science*. This fact proves the strength of the separation science in China," observes the journal.

Titled "Showcase of Chinese Separation Science," the issue presents the recent progress and accomplishments achieved by Chinese scientists in the field. A total of 18 academic papers were included in this issue, written by scholars from Mainland China, Hong Kong and Macau, and among them were two CAS Members and six winners of National Outstanding Young Scholars Fellowship.

"It can safely be expected that Chinese scientists will continue to contribute in an ever faster pace to the further development of the separation science as the economy will continue to grow. Consequently, we believe that we will also be seeing very rapid progress in field in China in the days to come," asserts the journal.

## 1.5 Structure of Matter

**A new supernova remnant discovered**
**(CAS, 2007-04-13)**


The CGPS continuum maps at 1420 MHz.

A new shell-type faint radio Supernova Remnant (SNR) has been discovered by CAS astronomer TIAN Wenwu and his Canadian colleagues, as reported by the April 3 issue of *Astronomy and Astrophysics*.

Named *SNR G108.2-0.6*, the remnant is about ten thousand light years away from the Earth with an expansion diameter of some 180 light years. It is also of the lowest surface brightness among all known remnants, according to Dr. Tian, a researcher from the CAS-affiliated National Astronomical Observatories

The discovery was made with the support of the Canadian Galactic Plane Survey (CGPS), a Canada-headed international collaboration to map all of the major interstellar components of the Milky Way. The project initiated ten years ago, and will by plan wind up in 2009.

SNR is an object produced by the violent explosion of a massive star at the end of its life. The explosion, called a supernova, is one of the most energetic events in the universe, and believed to occur in our galaxy roughly two to three every hundred years on average. The energy released in a supernova has

major effects on the interstellar media and greatly impacts the ecology of the Milky Way.

Although there were plenty of records on supernova phenomena in ancient China, preliterate events can only be traced down through modern scientific techniques. With up-to-date CGPS survey data that combine high sensitivity and resolution, the paper gave a comprehensive analysis on the key parameters of the newly-discovered SNR G108.2-0.6.

Research on SNRs has been an interesting and important topic for astronomers since there is discrepancy between the number of known SNRs (about 256) and the number predicted by theory (about 1,000 Galactic SNRs and 10,000 SNRs), a result of today's sensitivity-limited surveys.

Dr. Tian and his colleagues had already reported their discovery on an old SNR as the origin of high-energy cosmic  $\gamma$ -rays in the March 1 issue of *Astrophysical Journal Letters*.

### **Astronomical observations at the Antarctic expected by the end of 2008**

**(CAS, 2007-04-19)**

A research proposal on astronomical site selection and observation at the Dome A recently passed the scrutiny of an expert panel under the auspices of CAS, marking the kickoff the CAS-hosted project of CAS. Its objective is to make preparations for observation at the Antarctic by the end of 2008.

Headed by YAN Jun, director of the CAS Purple Mountain Observatory (PMO), the research will be carried out by a team composed of astronomers from PMO, the CAS Nanjing Institute of Astronomical Optics and Technology, the Polar Research Institute of China under the State Oceanic Administration, National Astronomical Observatories (headquarters) at CAS, Nanjing University, and the Tianjin Normal University. Its international partners will include co-workers from the New South Wales University in Australia, Institute of Technology of California in US, and University of California at Berkeley in US.

As the plateau can provide unique conditions for a wide range of astronomical observations, Antarctic astronomy will be greatly conducive for understanding the origin of the universe, says YE Shuhua, head of the panel and an astronomer from the CAS Shanghai Astronomical Observatory.

## **1.6 Transport and Space**

### **Large aircraft to be assembled in Shanghai & Xi'an**

**(China News, 2007-04-04)**

According to a report by *Wen Wei Po*, China will develop and produce large aircraft, with a take-off weight of at least 100 tons. It is estimated that the dream of large aircraft totally developed and produced by Chinese will become reality by 2020.

Xi'an of Shaanxi Province and Shanghai have been selected for assembling large airliners and cargo planes, the last procedure in production, respectively.

However, though the jumbo aircraft will be developed and produced in China, most of their components will be bought from suppliers from around the world.

### **China fixes new navigation satellite**

**(Xinhua Net, 2007-04-11)**

Chinese scientists and technicians have fixed a glitch in the recently launched Beidou (Big Dipper) experimental navigation satellite after 60 days of hard work, according to the Xi'an Satellite Control Center.

The control center reported that satellite number 4 is once again functioning normally.

The Beidou satellites provide all-weather and all-day navigation and positioning information.

Satellite 4, which went into orbit on Feb. 3, was unable to deploy its solar panels correctly after launch, said an official with the control center.

China has put four Beidou (Big Dipper) experimental navigation satellites into orbit. The previous three were launched in 2000 and 2003. Satellite number four serves as a backup satellite for the whole system and may some day replace Beidou 1, according to space officials.

### **China launches "Compass" navigation satellite**

**(People's Daily, 2007-04-14)**

China on early Saturday morning launched a navigation satellite, part of the country's "Compass" navigational system, which is expected to provide services to customers all over China and neighboring countries by 2008.

The carrier rocket, Long March 3-A, blasted off from the Xichang Satellite Launch Center in southwest China's Sichuan Province at 4:11 a.m., and sources with the center said that the satellite had "accurately" entered its orbit, at the height of 21,500 km.

The "Compass" navigational system is mainly designed for the country's economic development, providing navigation and positioning services in transportation, meteorology, petroleum prospecting, forest fire monitoring, disaster forecast, telecommunications and public security, among others.

With more satellites to be sent into orbits in the coming years, the system will cover China and its neighboring countries by 2008, before being expanded into a global network of navigation and positioning.

On February 3, China successfully put a test "Compass" satellite into the orbit, the fourth of such experimental satellites launched since 2000.

Experts said the "Compass" navigation experimental system is operating well and has played a significant role in providing all-weather and all-day navigation and positioning information.

China is one of the few countries that are capable of developing navigation satellite system on its own. Previous reports said it will provide clients with positioning accuracy within 10 meters, velocity accuracy with 0.2 meter per second and timing accuracy within 50 nanoseconds.

The system can help clients know their location at any time and place with accurate longitude, latitude and altitude data, and will offer "safer" positioning, velocity, timing communications for authorized users. The system includes at least 35 satellites, five geostationary Earth orbit (GEO) and 30 medium Earth orbit (MEO) satellites, according to previous reports.

China is willing to cooperate with other countries in developing its satellite navigation industry to allow the "Compass" system to operate with other global satellite positioning systems such as the United States' GPS, Russia's GLONASS and Europe's GALILEO navigational system, sources said.

The satellite and carrier rocket were developed respectively by the China Academy of Space Technology and China Academy of Launch Vehicle Technology, which are under the China Aerospace Science and Technology Corporation.

The launch represents the 97th flight of China's Long March series of rockets.

China's first manned spacecraft, Shenzhou V, blasted off in October 2003, making China the third nation after the Soviet Union and the United States to send a human into space, and another manned spaceship Shenzhou VI carrying two astronauts circled around the Earth continuously for five days before a safe return in October, 2005.

China's next manned space flight Shenzhou VII, the third in its space program, is scheduled to take place in 2008.

### **All systems go for China's oceanic survey satellite**

**(Xinhua Net, 2007-04-20)**

China's ocean monitoring satellite, "Haiyang-1B" (Ocean 1B), is functioning well and data transit tests have been successfully carried out, the state oceanic authority said on Friday.

The China-made satellite, which monitors the color and temperature of the ocean, went into the orbit on April 11 aboard a Long March-2C carrier rocket.

The data collection center in Beijing received the first batch of signals from the satellite on Friday morning. "The satellite is in good condition and working well," said Jiang Xingwei, director of the National Satellite Ocean Application Service.

The satellite will roam over the Sea of Japan, the Yellow Sea, the East China Sea, the Taiwan Strait, the South China Sea and emit signals when it passes over Beijing and Sanya, the coastal city of southern Hainan province.

Jiang said the State Oceanic Administration has sent a team to the South China Sea to carry out a simultaneous field survey over the next 40 days to check the reliability of satellite data.

"Haiyang-1B", an upgraded version of the earlier model "Haiyang-1A", provides three times as much information. Its observational range is 3,000 kilometers.

Oceanic officials say the satellite will be used to survey oceanic resources and develop coastal areas, help with port construction and monitor and prevent oceanic pollution, and also to study global environmental changes.

## **2 News from Universities**

### **35,000 foreigners expected to pass "Chinese TOFEL"**

**(People's Daily, 2007-04-23)**

The Chinese equivalent of the TOFEL, the Chinese Proficiency Test (HSK), was held in more than 40 cities across China on April 21 and 22. A total of 35,000 foreigners took the exam, 11% more than last year and a new record high.

Another group of nearly 6000 candidates took the first free improved HSK exam. A representative of the Chinese Proficiency Test Center at Beijing Language and Culture University said that one of the important characteristics of the improved HSK is its three levels "C primary, intermediate and advanced. In addition to an objective paper to examine listening and reading abilities, there is a more subjective component to judge conversation and writing ability. The improved HSK has been well received by most candidates. They believe that it is a good way to test their Chinese level.

In December 2006, the Chinese Proficiency Test Center of Beijing Language and Culture University released an improved HSK and announced a timetable for its implementation.

The free trial exam is one of the timetabled steps. Its purpose is to give candidates an understanding of the overall structure and content of the exam before they take it for real.

The trial will provide data for a comparison of the old and new HSK exams and ensure that the transition goes smoothly. In 2008, the updated HSK exam will be used.

### 3 Innovation Management

#### **China to invest 6 bln yuan for 12 big science instruments**

(China News, 2007-04-07)

During the eleventh five-year period (2006-2010), China intends to invest six billion yuan for building 12 big science instruments and facilities, said Bai Chunli, vice chairman of the China Association for Science and Technology in an interview given to a reporter from the *People's Daily*.

At present, every country in the world is fully aware of the importance that big science instruments play in upgrading the country's innovative capability. Many countries, especially developed countries, having completed the construction of many big science facilities, now outline a more ambitious goal with the hope that they can further develop these programs with more input, he said.

The big science instruments and facilities that have finished building or are being constructed in China include the Beijing electron positron collider (BEPC), synchrotron radiation device in Hefei, heavy ion accelerator in Lanzhou, the experimental advanced superconducting Tokamak (EAST), the long-wave and short-wave time service system, the remote-sensing satellite ground station, remote-sensing airplane, the Shanghai synchrotron radiation facility (SSRF), the earth crust movement observation network, the Southwest China wild species bank, and the biosafety laboratory.

So far, the big science instruments that have finished construction are operating well. They have raised China's position in the world in the research of some pioneering science fields and improved China's research and development capabilities in some strategically important technological fields, said Bai, who is also executive vice president of the Chinese Academy of Sciences.

China will conduct more international exchanges in the construction of the big science instruments so as to upgrade the country's independent innovative capabilities, he noted.

#### **New CAS institute breaks ground for construction in Yantai**

(CAS, 2007-04-09)



The ground-breaking ceremony of the newly-initiated Yantai Institute of Coastal Research for Sustainable Development (YIC) under CAS was held recently in the picturesque coastal city of Yantai, Shandong Province.

Present at the ceremony were CAS Vice

President SHI Erwei, Vice Governor of Shandong Province WANG Junmin and Deputy Mayor of Yantai ZHANG Renqiang among others. The ceremony was chaired by GAO Lingyu, deputy director of the YIC preparation team.

A speech was given by SHI Ping, director of the preparation team, on the general mission and outlook of YIC. The ceremony, he said, marked a new and crucial stage of the entire project. The establishment of YIC would not only provide a powerful S&T pillar for the sustainable development in the region, but also be a master stroke in the CAS agenda of its R&D enforcement in the 3rd-phase of the Knowledge Innovation Program. The preparation team shall pour all efforts into the building of a high-quality and top-level research institute, and contribute to the economic and social development of Yantai, Shandong and the entire nation. He also expressed his heartfelt thanks to all supports and solicitudes over the past months.

Officially launched in last June, the YIC aims to meet the national demands of strategic significances and challenge the frontier issues in the field. As planned, the institute will mainly concentrate on the sustainable exploration of the sea-water resources and energy development, the protection of the ecological setting along the coastline as well as systematic integration and engineering demonstration. At the same time, it targets the establishment of a modernized institutional system, i.e. a managerial mechanism conducive to knowledge transfer and technology renewal, together with an effective mechanism for the multi-lateral cooperation to be shared by various units in the system of regional innovation. The new institute is also working hard to grow itself into a regional incubator for talented people and to reap more R&D fruits.

The first-phase construction of the YIC involves three major buildings, namely an administration building, a dormitory for graduate students and the apartment building for experts and researchers.

### **Many Chinese core technologies two-generations behind developed countries**

**(People's Daily, 2007-04-20)**

Li Guojie, an academic at the Chinese Academy of Engineering and director of the Institute of Computing Technology under the Chinese Academy of Sciences, recently warned that many Chinese core technologies are actually at least two generations behind some foreign countries. Chinese science and technology personnel should be area and concerned about this.

According to China News Agency, Li made these comments during a speech delivered at the China Science and Humanities Forum, sponsored by the Graduate School of the Chinese Academy of Sciences. He also said that China has made new achievements in scientific research, which is of course a good thing.

However, with many foreign countries preaching the "China threat" theory, some Chinese in technological circle have become blindly optimistic about the country's technological level. According to Li, a number of core technologies in China are at least two generations behind some foreign countries. Chinese technical and research fellows should strive to close the gap. Li hopes that China can close the gap in core technology with developed countries to one generation by 2010.

### **Blueprint predicts major scientific breakthroughs**

**(People's Daily, 2007-04-27)**

China is expected to master key biotechnologies before 2010 and become a world leader in the field, a

top science official said yesterday.

It will also make breakthroughs in 20 bottleneck technologies relating to oil and gas prospecting and drilling while developing a digital database to help find more oil resources, Vice-Minister of Science and Technology Liu Yanhua said.

The ambitious goals were set in the nation's blueprint for science development in areas of social progress, such as the environment, health, resource and public safety, during the 11th Five-Year Plan (2006-10). The blueprint was released yesterday by the Ministry of Science and Technology (MOST), at the opening ceremony of its two-day national science and social development convention.

More reserves of metal resources will be built before 2010 and the total amount of usable metal resources is expected to grow by between 1.5 and 2 billion tons, according to the blueprint.

"The focus is on the exploration of rare metals," Liu said.

Technologies for prospecting and developing oil and gas resources in the deep water in the South China Sea will be introduced, as well as those for monitoring the marine environment in China's exclusive economic zone, which extends to a distance of 200 nautical miles, 370 km, out from its coast, and other important sea areas.

"The current situation of low-level usage of marine resources will change," Liu said.

In the field of environmental protection, breakthroughs are expected to be made in 10 to 15 crucial technologies relating to ecological restoration for rivers and lakes, and in 30 technologies on urban air-condition monitoring and soil pollution control, the blueprint said.

Also yesterday, the ministry launched its third project for social progress, entitled the "Regional Sustainable Development Science Promotion Act." It follows the Spark Plan, which began in 1986 and the Torch Plan of 1988, which greatly promoted processes in the agricultural science and hi-tech industries.

During the 10th Five-Year Plan (2001-05), more than 24,000 scientific discoveries were made and 3,000 of them have been patented, Liu said. Among the most important achievements were the invention of 22 new medicines, including seven chemical, seven biochemical and eight traditional Chinese medicines.

There were also breakthroughs in seawater desalting and in developing the offshore oil reserve in Bohai Bay. Facilities each producing 10,000 tons of fresh water per day are being set up in East China's Shandong Province, while new technologies in offshore drilling are helping to make Bohai Bay the third largest oil production base in East China.

## **4 China's International Science Cooperation**

### **Germany-China workshop on complicated samples held in Munich**

**(CAS, 2007-04-17)**

A Germany-China workshop on separation and analysis of complicated samples was held recently at the Institute of Clinico-Chemistry of Grosshadern Medical University, Munich. It was participated by 13 scientists from Germany and 12 scientists from China, including five researchers from the CAS Dalian Institute of Chemical Physics.

The two sides introduced respectively their own research interests, and conducted discussions and explored topics for further cooperation. In addition, Prof. Karl-Siegfried Boos representing the German side, and Prof. XU Guowang from the Chinese side, reviewed the accomplishments of the Workshop, including the organizing of the next Workshop, the subsequent cooperation, and exchanges of researchers.

This Workshop was organized by the "China-Germany Joint Research Group for the Separation and Analysis of Complicated Samples," which is supported by the Sino-German Center for Research Promotion, a joint organization of the China National Natural Science Foundation and the Germany Science Foundation. The co-leaders of the research group are Prof. Boos of the Institute of Clinico-Chemistry of Grosshadern Medical University, Munich, and Prof. XU Guowang of DICP.

During a period of three years, the group will carry out studies, with an objective of developing new methods for the separation and analysis of complicated samples, especially for those key samples derived from life sciences and environmental problems, such as in the studies of proteomics and metabolics.

The workshop was applauded by the participants, saying the meeting provided nice opportunities for exchanges and cooperation between both countries.

### **CAS institutes join forces with US lab to probe clean energy**

**(CAS, 2007-04-18)**

An international consortium for clean energy (ICCE) has recently been established, consisting of the U.S. Pacific Northwest National Laboratories (PNNL) in Richland, Washington, and two CAS institutes, namely, Shanxi Institute of Coal Chemistry (SICC) and Dalian Institute of Chemical Physics.

A protocol for collaborative exploitation of clear coal in the partnership was inked in Richland during the visit of a CAS delegation from 8 to 11 April. The agreement was signed by SICC Director SUN Yuhan and PNNL Vice Director Mike Davis.

It is expected that the inauguration of the ICCE would promote substantial cooperation between the two sides. Its first-stage enforcement includes the co-establishment of a web-site on the Internet acting as an informative platform, the periodical publication of a Quarterly Newsletter, a dialogue on intellectual patents in related technological developments and personnel exchange on specialized topics.

### **Vice Minister LIU Yanhua Meets with DFG President**

**(MOST, 2007-04-23)**

On 3 April 2007, VM LIU Yanhua met with Mr. Matthias Kleiner, president of German Research Foundation (DFG) and his party. LIU briefed the guests on the pattern and key research areas China finances and supports as well as sectors for international S&T cooperation. The German guests

introduced the means and principles by which DFG supports projects. The two sides exchanged opinions on how to facilitate cooperation between research institutes and enterprises.

For years, the National Natural Science Foundation of China and DFG have maintained a good cooperative relation. Both parties had supported the mutual visits between Chinese and German scientists and co-organized joint research and seminars. Two sides agreed to initiate joint study on analyzing research modes and organizing research activities.

**China-Germany S&T Cooperation Prolongs the Life of Lala Copper Mine  
(MOST, 2007-04-23)**

Commissioned by the Department of International Cooperation of MOST, the Office of International S&T Cooperation Programs recently organized the acceptance check to “Study of Key Technologies for Prolonging the Life of the Old Lala Copper Mine in West China”, a project under international S&T cooperation program.

By referring to foreign new theories and methodologies on improving the efficiency and tapping potentials of old and aged mines, the China-Germany project team, put forward for the first time that most Lala Copper Mine was formed in the low-pressure immiscible fluids under volcanic environment, the ore formation was controlled by the volcanic mechanism and the ore deposit spread around the crater. On the basis of this successful cooperation, Freiburg University, German partner in this cooperative project hoped for a long-term cooperation with the China so as to jointly build research and teaching base, strengthen exchange in personnel and information, and jointly cultivate talents. Current project set a new direction for future international cooperation.

**Int'l seminar held to improve information security  
(People's Daily, 2007-04-24)**

About 100 officials and experts gathered in Beijing on Tuesday to discuss how to step up information security.

Entitled "Information Security: China and the World," the seminar was hosted by the China Institute for International Strategic Studies (CIISS) and Michael Eric Bosman Hotung Foundation.

Xiong Guangkai, head of CIISS, said in his keynote speech that information security is faced with severe challenges.

"The extensive use of information networks may impact political stability, and new information technology will impact future warfare," he said.

The information society also poses economic and cultural challenges, he said.

Xiong called on the international community to work together to address information security issues.

In his address, former German President Roman Herzog highlighted the need to protect personal information.

Officials from the Chinese information industry and from economic planning bodies also took part in the two-day seminar while foreign attendees came from 12 countries in Asia, Europe, America and Oceania.

Before the seminar, Chinese Defense Minister Cao Gangchuan met with some attendees, saying the seminar was "a very timely event".

## **5 Miscellaneous**

### **Research on machine translation gains a prize in TC-STAR evaluation**

**(CAS, 2007-04-02)**

TC-STAR, an European integrated project focusing on Speech-to-Speech Translation (SST), annually holds competitive evaluations in order to encourage significant advances in all SST technologies. Recently, scientists from the Multilingual Interaction Technology and Evaluation Laboratory of the CAS Institute of Computing Technology brought their latest research fruits onto this international arena, and won a third prize.

The 2007 evaluation consists of three domains in total, namely the speech recognition, speech synthesis and machine translation. And the last one covers three directions including translation from Chinese to English and translation between Spanish and English. The CAS team took part in the Chinese-to-English evaluation, the text of which is from Voice of America (VOA) broadcast news and is further divided into two types of inputs: ASR (single best sentence, and more N-best, word lattices) and verbatim transcription.

This is the second time the research team participated in this international evaluation since last year, and their self-developed software of machine translation has gained much advance. With the support of the Dawning server developed in ICT, a greater quantity of data can be processed, and meanwhile, novel method and technology are developed, which in a large scale strengthened the translation quality comparing to last year.

At the same time, the scientists are impressed by those foreign competitors, who are also leveling up their technologies. The first prize winner is the RWTH University of Germany and the second prize is brought home by the Institute ITC-IRST of Italy. "We are still dropped behind by our foreign peers in the area and we should exercise much more efforts to sit among the world tops," said the team.

### **National foundation to help overseas-educated Chinese return home**

**(People's Daily, 2007-04-10)**

China launched a national foundation benefiting overseas-educated Chinese in Beijing on Monday, in an attempt to plug the country's brain drain.

The China Overseas-educated Talent Development Foundation was initiated by Western Returned Scholars Association, and will accept donations from home and abroad to help overseas-educated Chinese boost their careers in the country.

"The foundation will assist government departments to tap overseas talent resources and attract more overseas Chinese scholars to return home and serve the country," said an official with the foundation.

With an estimated 300,000 well-trained Chinese personnel working abroad, China is among the most affected by the so-called brain drain, said a recent research by the Chinese Academy of Social Sciences.

Statistics from the Ministry of Personnel show that of the 1.07 million students China has sent overseas since 1978, only about a quarter have returned.

### **More China-made high-speed trains to hit the rails**

**(China News, 2007-04-13)**

## China Highlights — April, 2007



China will put more than 500 China-made high-speed trains into operation this year after boosting the speed limit for rail traffic for the sixth time, the Ministry of Railways said on Thursday.

The speed boost will start on April 18, said Hu Yadong, the ministry's vice minister, at a press conference held in Beijing.

Hu said 280 high-speed trains will be put into operation on April 18 and a total 514 such trains be in use by the end of this year.

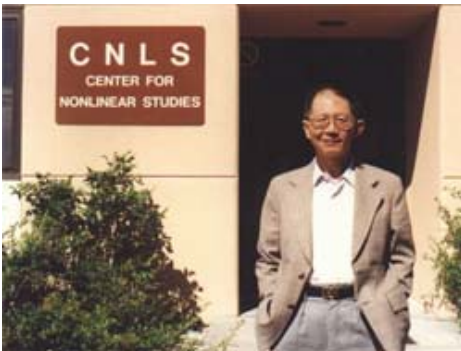
Hu said raising the speed limit will help to boost passenger and cargo capacity on the nation's 77,000-km railway lines by 18 percent and 12 percent respectively.

Travel time between major cities will be slashed by up to 50 percent as the trains will travel at speeds of up to 250 kilometers per hour, said Hu. Currently, express trains in China travel at an average of 115 kilometers per hour.

He Huawu, chief engineer of the ministry, said the upgrade of 6,003 kilometers of track has cost an estimated 29.6 billion yuan (3.8 billion U.S. dollars).

The high speed trains show that China has mastered technology that was once held by Japan, Germany and France, said Zhang Shuguang, the ministry's deputy chief engineer.

### CAS scientist honored with John Rinehart Award (CAS, 2007-04-28)



Prof. BAI Yilong from the CAS Institute of Mechanics has received the 2007 John Rinehart Award for his contributions to the theories of shear-band formation and damage in materials and for his leadership in exploring dynamic behavior of materials in China. The other laureate of the award this year is Lawrence E. Murr from University of Texas at el Paso, US.

Named after John S. Rinehart, a pioneer to the field of dynamic deformation of materials, this award was established in 1990 to recognize outstanding effort and creative work in the science and technology of dynamic processes in materials. Prof. Bai is the first Chinese winner of the prestigious award since its establishment.

Prof. Bai, a member of CAS and European Academy of Sciences, now serves as chairman of the academic committee of the State Key Laboratory of Non-Linear Mechanics, CAS. He has scored significant progress in the studies of impact dynamics, damage mechanics and multi-scale problems, and has published about 150 papers and two research books: *Adiabatic Shear Localization*, Pergamon Press (1992) and *Ductile Fracture and Ductility*, Academic Press (1987).

## 6 Informatio

### n for upcoming Workshops in June

**The 5th International Symposium on Management of Technology**

**Date:** June 1 – June 3

**City:** Hangzhou, Zhejiang Province

<http://www.cma.zju.edu.cn/ismot/index.htm>

**4th International Symposium on Neural Networks**

**Date:** June 3 – June 7

**City:** Nanjing, Jiangsu Province

<http://liu.ece.uic.edu/ISNN07/>

**1st IEEE & IFIP International Symposium on Theoretical Aspects of Software Engineering Conference (TASE 2007)**

**Date:** June 6 – June 8

**City:** Shanghai

<http://www.sei.ecnu.edu.cn/TASE2007/>

**2007 International Conference on Service Systems and Service Management**

**Date:** June 9 – June 11

**City:** Chengdu, Sichuan Province

<http://www.mgmt.uestc.edu.cn/icsssm07/>

**International Workshop on Coding and Cryptology**

**Date:** June 11 – June 15

**City:** Fuzhou, Fujian Province

<http://math.fjnu.edu.cn/iwcc2007/index.html>

**5th International Conference on Nonlinear Mechanics(ICNM-V)**

**Date:** June 11 – June 14

**City:** Shanghai

<http://www.siamm.shu.edu.cn:8000/default.aspx>

**OptiNet China 2007**

**Date:** June 13 – June 14

**City:** Beijing

<http://www.optinetchina.com/index.htm>

**The 5th International Institute for General Systems Studies**

**Date:** June 14 – June 17

**City:** Wuhan, Hubei Province

<http://www.optinetchina.com/index.htm>

**OSA Topical Conference on Nanophotonics**

**Date:** June 18 – June 21

**City:** Hangzhou, Zhejiang Province

<http://opt.zju.edu.cn/osanano>

**The International Conference On Spectral and High Order Methods (ICOSAHOM) 2007**

**Date:** June 18 – June 22

**City:** Hangzhou, Zhejiang Province

<http://lsec.cc.ac.cn/~icosahom/>

**The 12th MSOM conference**

**Date:** June 18 – June 19

**City:** Beijing

<http://www.rccm.tsinghua.edu.cn/MSOM2007/index.htm>

**14th Meeting of ISO/TC207 on Environmental Management**

**Date:** June 22 – June 29

**City:** Beijing

<http://www.isotc207beijing.cn/>

**Second Global Conference on Economic Geography**

**Date:** June 25 – June 28

**City:** Beijing

<http://courses.nus.edu.sg/course/geoywc/conference/econgeog.html>

**16th International Congress of DentoMaxilloFacial Radiology**

**Date:** June 26 – June 30

**City:** Beijing

<http://www.iadmfrcn.org/>

## **Abbreviations**

- CAS** - Chinese Academy of Sciences
- MOST** - Ministry of Science and Technology
- CRI** - China Radio International